Global Emerging Infection Surveillance - *Update*
Navy Hub
Emerging Illness Division
Naval Health Research Center, San Diego
June 1998 – October 1999

Background – Naval Health Research Center (NHRC), San Diego, began conducting surveillance of febrile respiratory illness (FRI) at military recruit camps in June 1998. Eight training camps, representing 5 service branches, along with Ft. Bragg (a non-training installation), report FRI rates to NHRC each week (Figure 1). Viral throat culture specimens are taken from a systematic sample of ill recruits. The specimens are shipped to NHRC to undergo testing for viral pathogens including influenza A and B, adenovirus, respiratory syncytial virus (RSV), and parainfluenza. FRI rates and viral testing results are posted on the Navy Emerging Infections web site: http://pc176.nhrc.navy.mil:80/disease/ilirates.htm#top

What's New

Dawn Taggett, MPH joined the NHRC as a Co-coordinator for the GEIS studies including the Febrile Respiratory Illness study.

New Viral Media kits are being issued to the sites for specimen sampling. Please use your existing supply first (if not expired).

Pertussis Study NHRC will conduct a surveillance study of *B. pertussis* and the development and validation of a sensitive diagnostic method for pertussis.

Pneumovax Study NHRC will conduct a Double-Blind Placebo-Controlled trial of the effectiveness of the pneumococcal vaccine among military trainees. Site personnel will be contaced for participation in both studies.

Flu Diagnostic NHRC will conduct a study of a new rapid flu diagnostic tool. We will keep you posted.

Current progress – Testing is complete for 2191 specimens taken between 6/8/99 and 8/31/99. Summary results are in Table 1.

Influenza – To date, 244 (11.1%) of the specimens have been positive for influenza, with type A accounting for 80% of the positives and type B the remaining 20% (Table1). During the period of April 15 to August 31, 1999, only six new cases of influenza were reported (Figure 3).

Adenovirus – Adenovirus is still the leading cause of FRI among recruits, as 54% of all specimens tested to date have been positive. The amount of disease caused by adenovirus varies by location ranging from 2.8% (Ft. Bragg) to 81.9% (NRTC, Great Lakes). More than 80% of the specimens tested to date have come from unvaccinated personnel (Table 1).

Other pathogens – RSV, parainfluenza 1, parainfluenza 2, and parainfluenza 3 were isolated in 1.0%, 0.5%, 0.5%, and 1.1% of the specimens, respectively (Table 1).

Negative specimens – Approximately 36% of the specimens were completely negative for virus (Table 1).

Temporal trends – Monthly adenovirus and influenza infection rates are shown in Figures 2 and 3. Overall, occurrences of FRI at the training sites reflect substantial increases during the fall, winter and spring months, and a steady decline during the summer.
Influenza – During the period of April 15 to August 31, 1999, there were six reported cases of influenza A at the sites. Winter and early spring are the seasons in which we see the majority of influenza cases (Figure 3). This is in stark contrast to the adenovirus, which has crossed the epidemic threshold during the fall and late spring months.
Adenovirus – A disparity exists among adenovirus rates at the training sites, with NRTC, Great Lakes peaking in April, and decreasing through July (Figure 2). Additionally, adenovirus infection rates are higher during July, 99' for three training sites (Fort Jackson, NRTC Great Lakes, and MCRD San Diego) when compared to July, 98' rates (Figure 2). As fall and winter approach without a vaccine (which is not anticipated until at least 2003), adenovirus epidemics can be expected at several of the sites.

Breaking News!

- *A clinical trial of a rapid test for adenovirus is underway at Ft. Jackson. Recruits enrolled in the FRI study will be asked to volunteer for a second throat swab for the rapid test, which can provide results in less than 30 minutes. The results of the standard culture and rapid test will be compared to evaluate the accuracy of the rapid testing method.*
- *An unusual strain of the Influenza A virus* (A/H1N1/Beijing 262) *was cultured from specimens collected by research investigators at the Ft. Benning site. The CDC is currently investigating this discovery.*

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Figure 1.

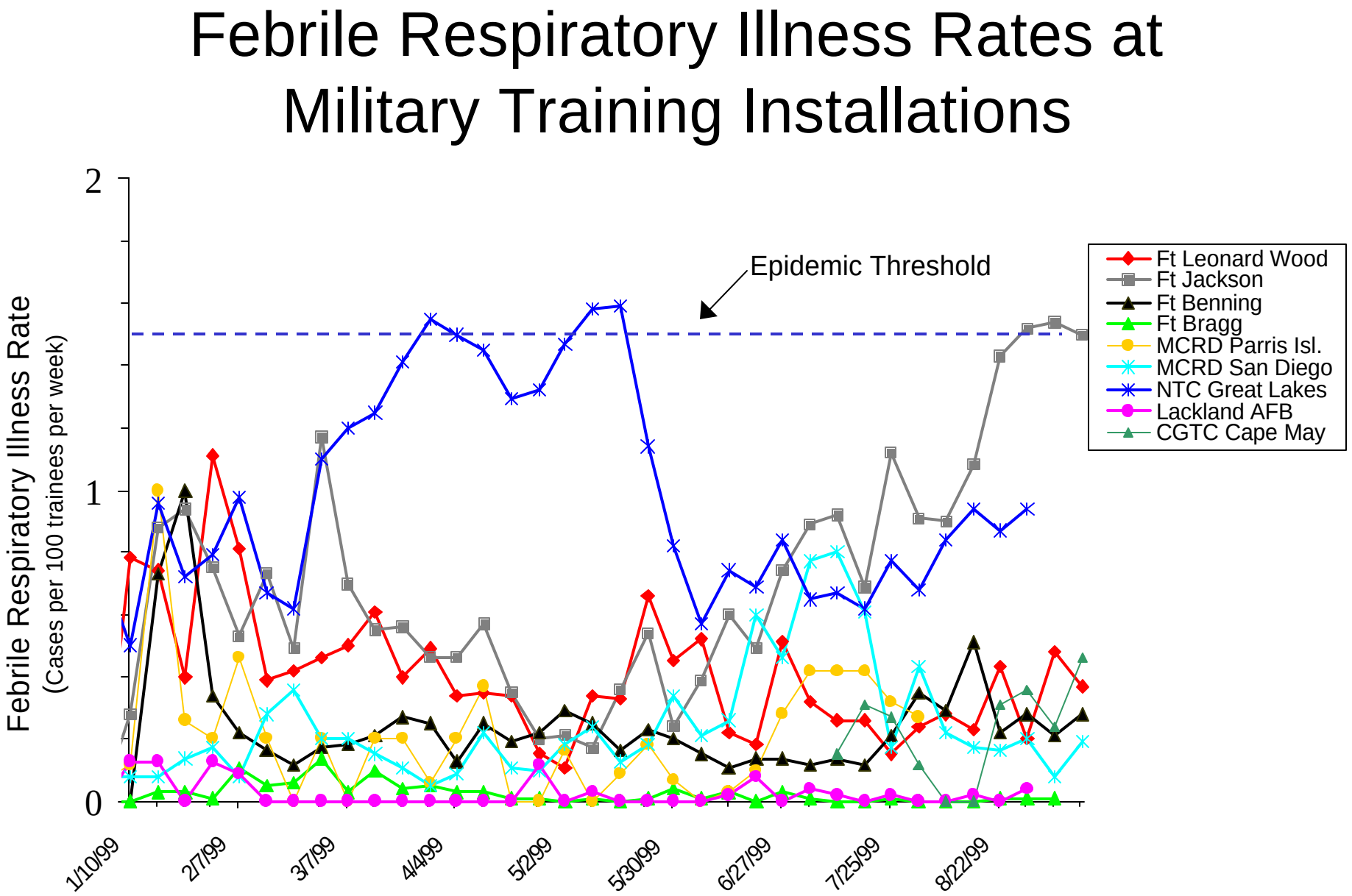

Febrile Respiratory Illness Rates at Military Training Installations
Febrile Respiratory Illness Rate
(Cases per 100 trainees per week)
2
1
0
Epidemic Threshold
Ft Leonard Wood
Ft Jackson
Ft Benning
Ft Bragg
MCRD Parris Isl.
MCRD San Diego
NTC Great Lakes
Lackland AFB
CGTC Cape May
1/10/99
2/7/99
3/7/99
4/4/99
5/2/99
5/30/99
6/27/99
7/25/99
8/22/99

Table 1. Summary of viral testing results for specimens taken between 8 June 1998 and 31 July 1999. Specimens were obtained from military trainees who sought medical care and had an oral temperature of ≥ 100.5°F and cough or sore throat.

	Great Lakes	MCRD San Diego	Ft. Leonard Wood	Ft. Jackson	Lackland AFB	Ft. Benning	Ft. Bragg	Total
Number tested	**397**	**241**	**233**	**962**	**32**	**264**	**36**	**2191**
% Influenza	**5.3**	**6.2**	**11.2**	**13.3**	**12.5**	**8.3**	**66.7**	**11.1**
% Type A	**3.8**	**5.8**	**9.9**	**9.5**	**12.5**	**8.3**	**66.7**	**8.9**
% Type B	**1.5**	**0.4**	**1.3**	**3.8**	**0**	**1.1**	**0**	**2.3**
% Adenovirus	**81.9**	**80.1**	**14.6**	**53.7**	**9.4**	**40.5**	**2.8**	**54.0**
% RSV	**1.0**	**2.5**	**1.3**	**0.7**	**3.1**	**0**	**0**	**1.0**
% Parainfluenza 1	**0.3**	**0.8**	**0.9**	**0.6**	**0**	**0.4**	**0**	**0.5**
% Parainfluenza 2	**0.3**	**0.8**	**0.9**	**0.6**	**0**	**0**	**0**	**0.5**
% Parainfluenza 3	**0.8**	**2.1**	**2.6**	**1.0**	**0**	**0**	**0**	**1.1**
% Negative	**16.4**	**16.2**	**70.8**	**35.2**	**78.1**	**50.0**	**30.6**	**36.4**

Note: Column percentages total more than 100 percent because some specimens were positive for more than one virus.

Figure 2. Adenovirus infection rates at military training camps.

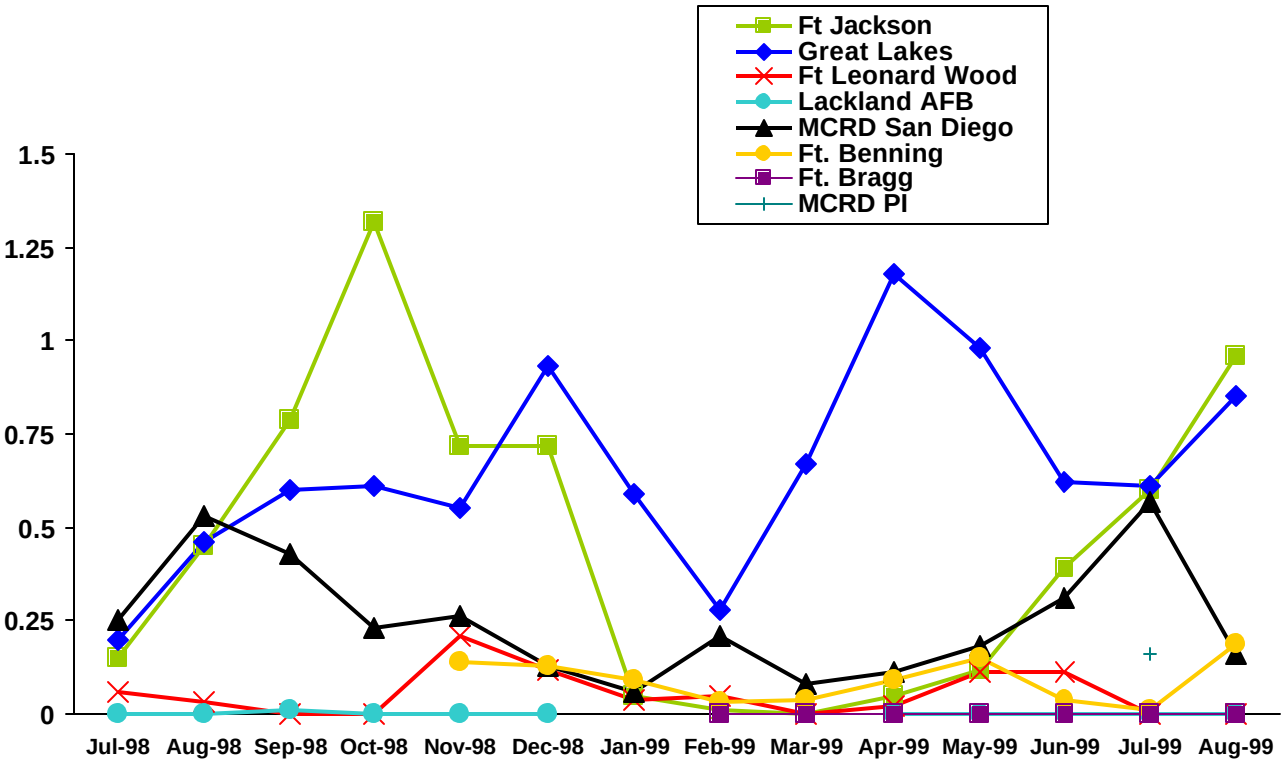
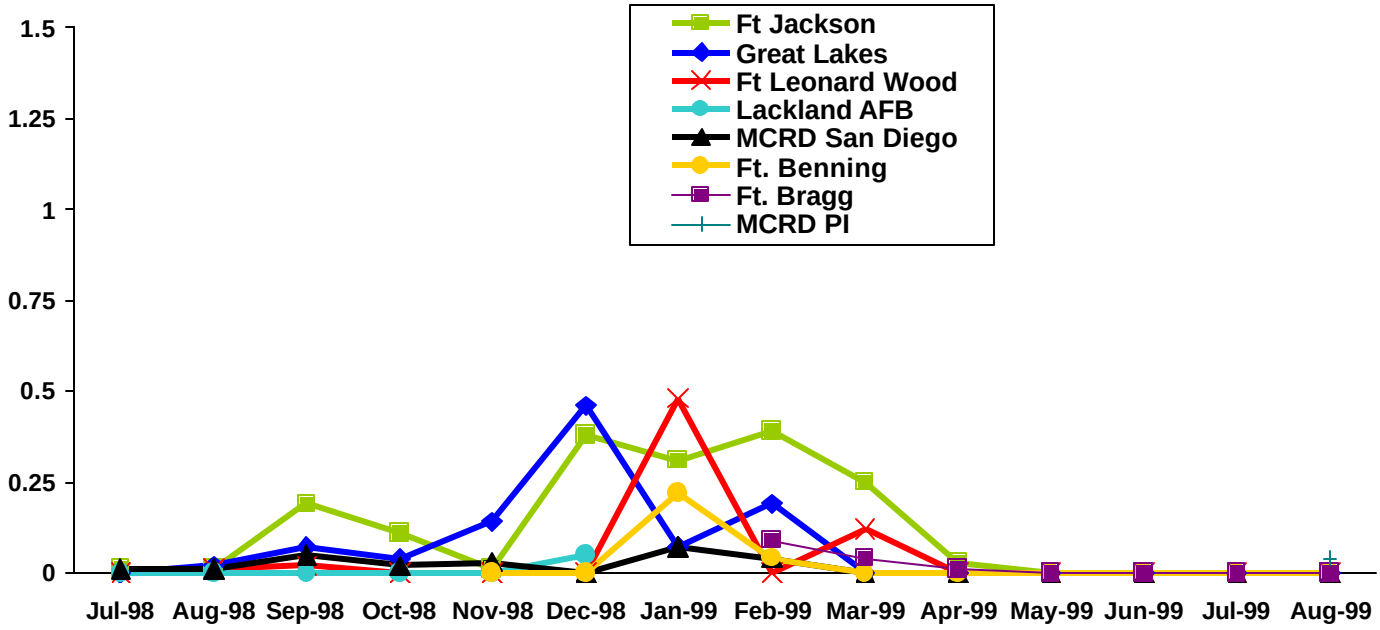


Figure 3. Influenza infection rates at military training camps.



Figures 2 & 3. Rates are calculated by multiplying the FRI rate by the proportion (%) of specimens testing positive for adenovirus and influenza